BELKIN

High Speed
ADSL2+ Modem

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Connect your PC for high-speed Internet access

Connect

User Manual

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BELKIN

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Introduction

Thank you for purchasing the Belkin ADSL 2+ Modem. In minutes you will be able to connect to the Internet. The following is a list of features that make your Modem an ideal solution for your home or small office. Please be sure to read through this User Manual completely.

Product Features

Compatibility with both PC's and Mac® Computers

The Modem supports a variety of networking environments including Mac OS® 8.x, 9.x & v10.x, Windows® 7, Vista, NT, 2000 and XP, and others. You need an Internet browser and a network adapter that supports TCP/IP (the standard language of the Internet).

Front-Panel LED Display

Lighted LED's on the front of the Modem indicate which functions are in operation. You'll know at-a-glance whether your Modem is connected to the Internet. This feature eliminates the need for advanced software and status-monitoring procedures.

Web-Based Advanced User Interface

You can set up the Modem advanced functions easily through your web browser, without having to install additional software onto the computer. There are no disks to install or keep track of and, best of all, you can make changes and perform setup functions from any computer on the network quickly and easily.

Built-in Dynamic Host Configuration Protocol (DHCP)

Built-In Dynamic Host Configuration Protocol (DHCP) on-board makes for the easiest possible connection of a network. The DHCP server will assign IP addresses to each computer automatically so there is no need for a complicated networking setup.

NAT IP Address Sharing

Your Modem employs Network Address Translation (NAT) to share the single IP address assigned to you by your Internet Service Provider while saving the cost of adding additional IP addresses to your Internet service account.

SPI Firewall

Your Modem is equipped with a firewall that will protect your network from a wide array of common hacker attacks including IP Spoofing, Land Attack, Ping of Death (PoD), Denial of Service (DoS), IP with zero length, Smurf Attack, TCP Null Scan, SYN flood, UDP flooding, Tear Drop Attack, ICMP defect, RIP defect, and fragment flooding.

MAC Address Filtering

For added security, you can set up a list of MAC addresses (unique client identifiers) that are allowed access to your network. Every computer has its own MAC address. Simply enter these MAC addresses into a list using the web-based user interface and you can control access to your network.

Universal Plug-and-Play (UPnP) Compatibility

UPnP (Universal Plug-and-Play) is a technology that offers seamless operation of voice messaging, video messaging, games, and other applications that are UPnP-compliant.

Support for VPN Pass-Through

If you connect to your office network from home using a VPN connection, your Modem will allow your VPN-equipped computer to pass through the Modem and to your office network.

Make sure you have the following

Package Contents

- ADSL Modem
- RJ11 Telephone Cable
- RJ45 Ethernet Networking Cable
- Power Adapter
- User Manual CD

System Requirements

- An active ADSL service with a telephone wall jack for connecting the Modem
- At least one computer with a Network Interface Card (NIC) and Internet browser installed and correctly configured
- TCP/IP networking protocol installed on each computer connected to the Modem
- No other DHCP server on your local network assigning IP addresses to computers and devices

Internet Connection Settings

Please collect the following information from your Internet Service Provider (ISP) before setting up the ADSL Modem.

- Internet connection protocol: _____ (PPPoE, PPPoA,1483 Bridged*)
- Multiplexing method or Encapsulation: _____ (LLC or VC MUX)
- Virtual circuit: VPI (Virtual Path Identifier) _____ (a number between 0 and 255)
- VCI (Virtual Channel Identifier) _____ (a number between 1 and 65535)
- For PPPoE and PPPoA users: ADSL account user name _____ and password _____
- IP address for Domain Name Server ___ . ___ . ___ . ___ (If specified by your ISP)

*1483 Bridged turns all advanced features off in the Modem, such as Firewall & Dynamic DNS. The username and password is then sent via PPPoE connection software installed on your PC.

The Modem is designed to be placed on a desktop. All of the cables exit from the rear of the Modem for better organization and utility. The LED indicators are easily visible on the front of the Modem to provide you with information about network activity and status.

Front Panel

1. Power LED

When you apply power to the Modem or restart it, a short period of time elapses while the Modem boots up. When the Modem has completely booted up, the Power LED becomes a SOLID light, indicating the Modem is ready for use.

Off	Modem is off
On	Modem is on

2. ADSL DATA LED

The ADSL Data LED shows you when the Modem is connected to the Internet. When the LED is OFF, the Modem is NOT connected to the Internet. When the LED is solid light, the Modem is connected to the Internet. When the LED is blinking, the Modem is transmitting or receiving data from the Internet.

Off	Not connected to Internet
On - blinking	Connected and transmitting or receiving data
On	Connected to Internet

Knowing Your Modem

3. ADSL SYNC LED

The ADSL LED flashes light during negotiation with your ISP. It stays light when the Modem is connected properly to your ADSL service.

On - blinking slow	No ADSL connection
On - blinking fast	Negotiating connection
On	ADSL link is up and connected

4. LAN Status LED

When a computer is properly connected to the LAN port on the rear of the Modem, the associated LED will light. A solid light means a computer or a network-enabled device is connected. When information is being sent over the port, the LED blinks rapidly.

Off	Your computer is not connected
On - blinking	Connected and transmitting or receiving data
On	Your computer is connected

5. USB DATA LED

When a computer is properly connected to the USB port on the rear of the Modem, the LED will light. Solid GREEN means a computer is connected and the drivers are installed. When information is being sent over the port, the LED blinks rapidly.

Off	Your computer is not connected
Green - blinking	Connected and transmitting or receiving data
Green	Your computer is connected

Back Panel

6. Power Plug

Connect the included 12V 1A DC power supply to this inlet. Using the wrong type of power adapter may cause damage to your Modem.

7. Reset

The “Reset” button is used in rare cases when the Modem may function improperly. Resetting the Modem will restore the Modem’s normal operation while maintaining the programmed settings. You can also restore the factory default settings by using the Reset button. Use the restore option in instances where you may have forgotten your custom password.

a. Resetting the Modem

Push and hold the Reset button for one second then release it. When the PWR light becomes solid again the reset is complete.

b. Restoring the Factory Defaults

Push and hold the Reset button for ten seconds then release it. When the PWR light becomes solid again the restore is complete.

8. USB

This port is for connecting your Modem to the computer via USB. If you do not have Ethernet or wish to use USB, connect your computer here.

9. LAN

The Ethernet port is RJ45, 10/100 auto-negotiation. Connect your network-enabled computers or any networking devices to this port.

10. ADSL

This port is for connection to your ADSL line. Connect your ADSL line to this port.

Connecting your Computer via Ethernet

1. Power off your computer and Modem
2. Connect your computer to the Ethernet port on the rear of the Modem by using an Ethernet networking cable (an Ethernet network cable is supplied).
3. Power on your computer and Modem.

Connecting your Computer via USB (Windows XP or later)

1. Locate a USB cable.
2. Connect one end into the port labelled USB on the Modem
3. Power on your computer and Modem.
4. Insert the supplied CD into the computer then double click "USBSetup.exe" under "USB driver" folder"
5. Click next to follow the instructions to install USB driver.
6. It will prompt you to connect another end to your PC during installation
7. Once the installer has finished, click finish.

Connecting your ADSL Line

Connection for the Modem to the ADSL line varies by country and region. Typically it involves line filter or a line filter with built-in splitter to allow simultaneous use of ADSL service and telephone service on the same telephone line. Please read the following steps carefully and select appropriate method.

1. If your telephone service and ADSL service are on the same telephone line, ADSL line filters are needed for each telephone and device, such as answering machine, fax machine, and caller ID display. Additional splitters may be used to separate telephone lines for telephone and the Modem.

   Note: Do not connect the ADSL line filter between the wall jack and the Modem—this will prevent ADSL service from reaching the Modem.

2. If your telephone service and ADSL service are on the same telephone line and you are using an ADSL line filter with built-in splitter, connect the splitter to the telephone wall jack providing ADSL service. Then, connect the telephone cord from the ADSL line filter RJ11 port generally labelled “ADSL” to the RJ11 port labelled “ADSL” on the back of your Modem. Connect telephony device to the other port on the ADSL splitter commonly labelled “Phone”. An additional ADSL line filter is needed for another telephone and device on the same line.

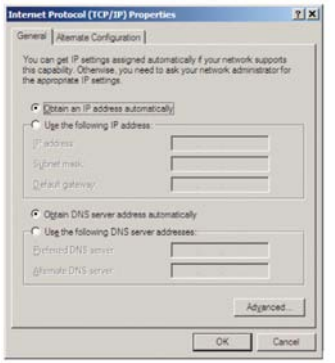
   Note: One RJ11 telephone cord is supplied. When inserting an RJ11 plug, be sure the tab on the plug clicks into position to ensure that it is properly seated.

3. If you have a dedicated ADSL service telephone line with an RJ11 wall jack, simply connect a telephone cord from the wall jack to the RJ11 port labelled “ADSL” on the back of your Modem.

In order for your computer to properly communicate with your Modem, you will need to change your computer’s “TCP/IP Ethernet” settings to “Obtain an IP address automatically/Using DHCP”. This is normally the default setting in most home computers.

Manually Configuring Network Adapters in Windows XP, 2000, or NT

1. Click “Start”, “Settings”, and then “Control Panel”.
2. Double-click on the “Network and dial-up connections” icon (Windows 2000) or the “Network Connections” icon (Windows XP).
3. Right-click on the “Local Area Connection” associated with your network adapter and select “Properties” from the drop-down menu.
4. In the “Local Area Connection Properties” window, click “Internet Protocol (TCP/IP)” and click the “Properties” button.


Internet Protocol (TCP/IP) Properties
General
Alternate Configuration
You can get IP settings assigned automatically if your network supports this capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
Obtain an IP address automatically
Use the following IP address:
IP address:
Subnet mask:
Default gateway:
Obtain DNS server address automatically
Use the following DNS server addresses:
Preferred DNS server:
Alternate DNS server:
Advanced...
OK
Cancel

5. If not already selected, select “Obtain an IP address automatically” and “Obtain DNS server address automatically”. Click “OK”.
   Your network adapter(s) are now configured for use with the Modem.

Manually Configuring Network Adapters in Windows Vista

1. Click “Start”, “Control Panel”
2. Double-click on the “Network and Sharing Center” icon and then select "Manage network connections"
3. Right-click on the “Local Area Connection” associated with your network adapter and select “Properties” from the drop-down menu
4. In the “Local Area Connection Properties” window, click “Internet Protocol Version 6 (TCP/IPv6)” and click the “Properties” button.
5. If not already selected, select “Obtain an IP address automatically” and “Obtain DNS server address automatically”. Click “OK”.
6. In the “Local Area Connection Properties” window, click “Internet Protocol Version 4 (TCP/IPv4)” and click the “Properties” button.
7. If not already selected, select “Obtain an IP address automatically” and “Obtain DNS server address automatically”. Click “OK”.
8. If your telephone service and ADSL service are on the same, your network adapter(s) are now configured for use with the Modem.

Manually Configuring Network Adapters in Windows 7

1. Click “Start”, “Control Panel”, "Network and Internet"
2. Click on the “Network and Sharing Center” and then click "Change adapter settings"
3. Right-click on the “Local Area Connection” associated with your network adapter and select “Properties” from the drop-down menu
4. In the “Local Area Connection Properties” window, click “Internet Protocol Version 6 (TCP/IPv6)” and click the “Properties” button.
5. If not already selected, select “Obtain an IP address automatically” and “Obtain DNS server address automatically”. Click “OK”.
6. In the “Local Area Connection Properties” window, click “Internet Protocol Version 4 (TCP/IPv4)” and click the “Properties” button.
7. If not already selected, select “Obtain an IP address automatically” and “Obtain DNS server address automatically”. Click “OK”.
8. If your telephone service and ADSL service are on the same, your network adapter(s) are now configured for use with the Modem.

Setting up your Computer

Manually Configuring Network Adapters in Mac OS up to 9.x

In order for your computer to properly communicate with your Modem, you will need to change your Mac computer’s TCP/IP settings to DHCP.

1. Pull down the Apple menu. Select “Control Panels” and select “TCP/IP”.
2. You will see the TCP/IP control panel. Select “Ethernet Built-In” or “Ethernet” in the “Connect via:” drop-down menu.
3. Next to “Configure”, if not already set, choose “Using DHCP Server”. This will tell the computer to obtain an IP address from the Modem.

Manually Configuring Network Adapters in Mac OS X

1. Click on the “System Preferences” icon.
2. Select “Network” from the “System Preferences” menu.
3. Select “Built-in Ethernet” next to “Show” in the Network menu.
4. Select the “TCP/IP” tab. next to “Configure”, you should see “Manually” or “Using DHCP”. If you do not, check the PPPoE tab to make sure that “Connect using PPPoE” is NOT selected.
5. If not already selected, select “Using DHCP” next to “Configure”, then click “Apply Now”.

Your network adapter(s) are now configured for use with the Modem.

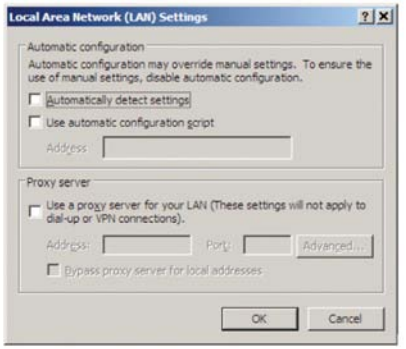
Recommended Web Browser Settings

In most cases, you will not need to make any changes to your web browser's settings. If you are having trouble accessing the Internet or the advanced web-based user interface, then change your browser's settings to the recommended settings in this section.

Internet Explorer 4.0 or Higher

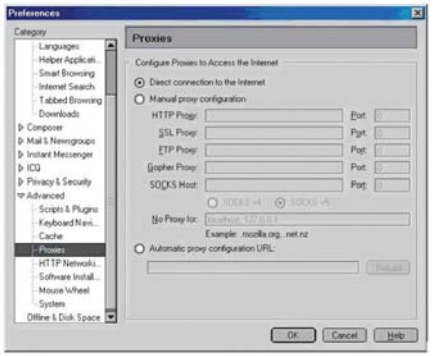
1. Start your web browser. Select "Tools" then "Internet Options".
2. In the "Internet Options" screen, there are three selections:

   "Never dial a connection", "Dial whenever a network connection is not present", and "Always dial my default connection". If you can make a selection, select "Never dial a connection". If you cannot make a selection, go to the next step.


Local Area Network (LAN) Settings
Automatic configuration
Automatic configuration may override manual settings. To ensure the use of manual settings, disable automatic configuration.
Automatically detect settings
Use automatic configuration script
Address
Proxy server
Use a proxy server for your LAN (These settings will not apply to dial-up or VPN connections).
Address:
Port:
Advanced...
Bypass proxy server for local addresses
OK
Cancel

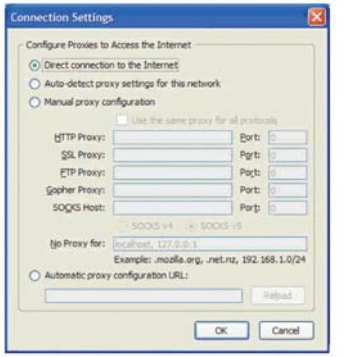
3. Under the "Internet Options" screen, click on "Connections" and select "LAN Settings...".
4. Make sure there are no check marks next to any of the displayed options: "Automatically detect settings", "Use automatic configuration script", and "Use a proxy server". Click "OK". Then click "OK" again in the "Internet Options" page.

Netscape Navigator 4.0 or Higher



1. Start Netscape, click on "Edit" then "Preferences".
2. In the "Preferences" window, click on "Advanced" then select "Proxies". In the "Proxies" window, select "Direct connection to the Internet".

Mozilla FireFox 1.0 or Higher



1. Start FireFox, click on "Tools" then "Options"
2. In the "General" tab, click "Connection Settings"
3. Select "Direct connection to the Internet" and then click OK.

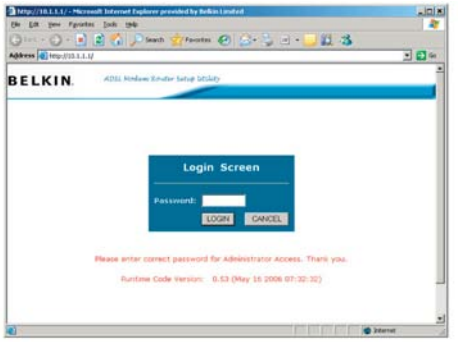
MAC OS – Safari

1. Start Safari
2. Click “Preferences”.
3. Click the “Advanced” tab.
4. Click “Change Settings”. The Network panel will open to the Proxies tab.
5. Verify all boxes are unchecked. To remove a checkmark, click in the box once.
6. Click the “Apply Now” button.
7. Close “System Preferences“
8. Close the “Preferences”.

Understanding the Web-Based User Interface

The Modem can be configured by any browser such as Internet Explorer 4.0 or above. Using the web management interface, you may configure the Modem and view statistics to monitor network activity. Type “10.1.1.1” (do not type in anything else such as “http://” or “www”) in your browser’s address bar. Then press the “Enter” key.

The following screen will appear in your browser to prompt you to log in. The default Password is “admin”. Enter the Password, and then click the “Log In” button to log in.



Navigating the Web Browser Interface

The Modem’s management interface consists of a Setup Wizard and an Advanced Setup section.

Setup Wizard

Use the Setup Wizard to quickly configure the Modem with your username and password.

Advanced Setup

Advanced Setup offers more advanced functions such as hacker attack detection, IP and MAC address filtering, virtual server setup, virtual DMZ host, and many more functions.

Making Configuration Changes

Configurable parameters have a dialog box or a drop-down list. Once a configuration change has been made on a page, most times you will need to click the “SAVE SETTINGS” or “NEXT” button at the bottom of the page to enable the new setting. Some options may also have an “ADD” button also.

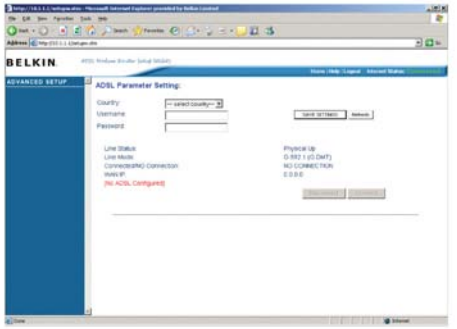
Note: To ensure proper screen refresh after a command entry, be sure that Internet Explorer 5.0 and above is configured as follows: Under the menu Tools/Internet Options/General/Temporary Internet Files/ Settings, the setting for “Check for newer versions of stored pages” should be “Every visit to the page.”

Setup Wizard

After successfully logging into the Modem, you will be prompted with the following screen. You can quickly select your country, add in your username and password for your ISP into the Modem. Once you have added all details correctly, click “Save Settings”.

The status section shows:

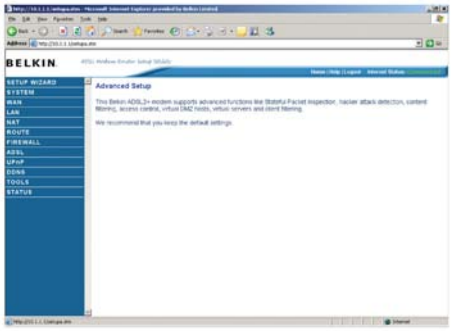
- Line Status – detects if the telephone line has correct line sync
- Line Mode – This shows the current line mode, (G.DMT is common for ADSL and ADSL2/ADSL2+)
- Connected/NO Connection – Shows current Internet connection status
- WAN IP – This is the IP Address that the ISP has assigned to the Modem.



Advanced Setup

Clicking the Home icon returns you to the home page. The Main Menu links are used to navigate to other menus that display configuration parameters and statistics.

The Modem’s advanced management interface contains 14 main menu items as described in the following table.

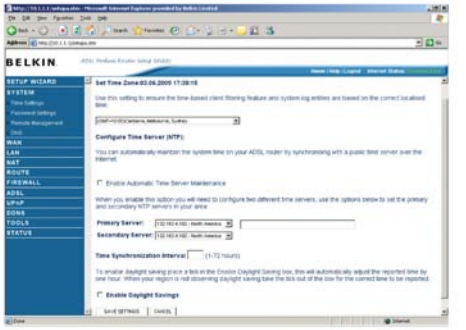


Menu Description

Menu	Description
System	Sets the local time zone, the password for administrator access, the IP address of a PC that will be allowed to manage the Modem remotely, and the IP address of a Domain Name Server.
WAN	Specifies the Internet connection settings.
LAN	Sets the TCP/IP configuration for the Modem LAN interface and DHCP clients.
NAT	Shares a single ISP account with multiple users, sets up Port forwarding.
Route	Sets routing parameters and displays the current routing table.
Firewall	Configures a variety of security and specialized functions including: Access Control, URL blocking, Internet access control scheduling, Intruder detection, and DMZ.
ADSL	Sets the ADSL operation type and shows the ADSL status.
UPnP	Configures the Modem's Universal Plug and Play features.
DDNS	Configures the Dynamic DNS function.
Tools	Contains options to back up and restore the current configuration, restore all configuration settings to the factory defaults, update system firmware, or reset the system.
Status	Provides WAN connection type and status, firmware and hardware version numbers, system IP settings, as well as DHCP, NAT, and firewall information.

System Settings

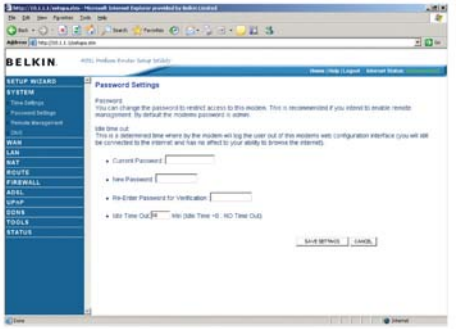
Time Settings



Set the time zone and time server for the Modem. This information is used for log entries and client access control.

Check "Enable Automatic Time Server Maintenance" to automatically maintain the Modem's system time by synchronizing with a public time server over the Internet. Then configure two different time servers by selecting the options in the Primary Server and Secondary Server fields.

Password Settings



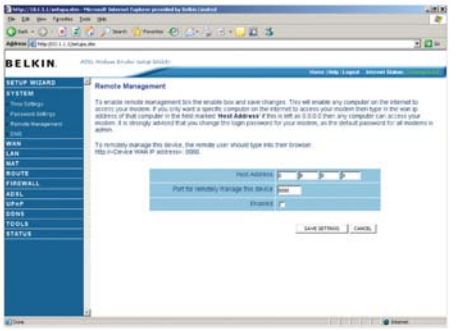
Use this page to restrict access based on a password. By default, the password is "admin".

Passwords can contain from 3 to12 alphanumeric characters which are case sensitive.

Note: If your password is lost, or you cannot gain access to the user interface, press the reset button on the rear panel (holding it down for at least 10 seconds) to restore the factory defaults. (By default the password is "admin" password.)

Enter a maximum Idle Time Out (in minutes) to define a maximum period of time an inactive login session will be maintained. If the connection is inactive for longer than the maximum idle time, it will be logged out, and you will have to login to the web management system again. (Default: 10 minutes)

Remote Management

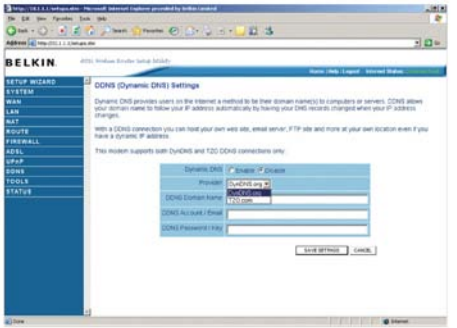


By default, management access is only available to users on your local network. However, you can also manage the Modem from a remote host by checking the Enabled check box, and if you wish you can set a HOST ADDRESS, which will only allow that computer to use remote management. The port field should be left as the default setting of 8080 unless you need to change it. After any changes are made you must click on “Save Settings” to apply them.

Note: If you check “Enabled” and specify an IP address of 0.0.0.0, any host can manage the Modem.

For remote management via WAN IP address you need to connect using port 8080. Simply enter WAN IP address followed by :8080 in the address field of your web browser, for example, 123.123.123.123:8080. This applies unless you change the port setting, in which case you need to substitute the 8080 for whatever port you assign.

DNS

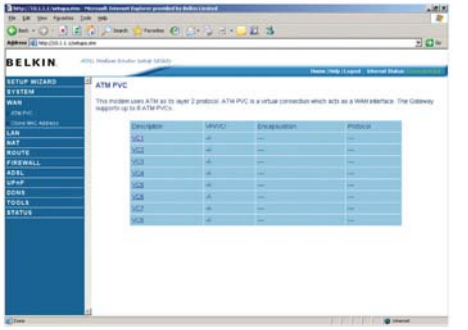


Domain Name Servers are used to map a domain name (e.g., www.somesite.com) to the equivalent numerical IP address (e.g., 64.147.25.20). Your ISP should provide the IP address of one or more Domain Name Servers. If your ISP requires you to manually specify the addresses, enter them on this page.

WAN

Specify the WAN (Wide Area Network) connection parameters provided by your Internet Service Provider (ISP).

ATM PVC



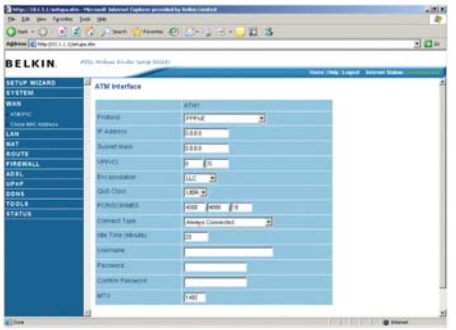
The Modem uses ATM (Asynchronous Transfer Mode) as its WAN interface. Click on each ATM VC for WAN configuration.

See the table below for a description of the parameters.

Parameter	Description
Description	Click on the VC to set the values for the connection.
VPI/VCI	Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI).
Encapsulation	Specifies how to handle multiple protocols at the ATM transport layer. • VC-MUX - Point-to-Point Protocol over ATM Virtual Circuit Multiplexer (null encapsulation) allows only one protocol running per virtual circuit with less overhead. • LLC - Point-to-Point Protocol over ATM Logical Link Control (LLC) allows multiple protocols running over one virtual circuit (using slightly more overhead).
Protocol	Protocol used for the connection

ATM Interface

Clicking on the ATM VC brings up the following screen. The Modem uses ATM as its WAN interface. Protocols including 1483 Routing, 1483 Bridging, MAC Encapsulated Routing (MER), PPPoA and PPPoE with LLC-SNAP and VC-Mux encapsulations are supported for each ATM PVC.



When you have finished entering your connection parameters, click “SAVE SETINGS”. You can verify that you have established an ADSL connection by clicking Status at the bottom of the left-hand menu.

See the table for a description of the parameters.

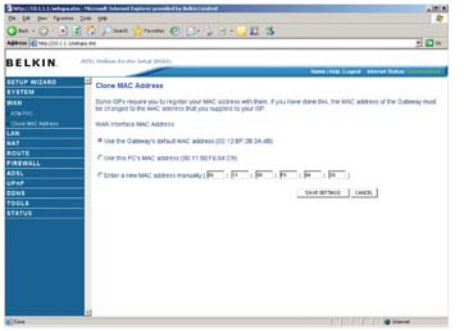
Parameter	Description
Protocol	• Disable: Disables the connection. • 1483 Bridging: Bridging is a standardized layer 2 technology. It is typically used in corporate networks to extend the physical reach of a single LAN segment and increase the number of stations on a LAN without compromising performance. Bridged data is encapsulated using the RFC1483 protocol to enable data transport. • PPPoA: Point-to-Point Protocol over ATM is a method of encapsulating data for transmission to a far point. • 1483 Routing: 1483 Routing allows a simple, low-cost connection to the Internet via a standard Ethernet port. The Modem looks up the network address for each packet seen on the LAN port. If the address is listed in the routing table as local, it is filtered. If the address is listed under the ADSL port, it is forwarded. Or if the address is not found, then it is automatically forwarded to the default Modem (i.e., the Modem at the head end). • PPPoE: Point-to-Point over Ethernet is a common connection method used for xDSL. • MAC Encapsulated Routing: If your ADSL service is a Bridged mode service and you want to share the connection to multiple PC’s, please select MAC Encapsulated Routing. MER is a protocol that allows you do IP routing with NAT enabled.
VPI/VCI	See Virtual Path Identifier (VPI) and Virtual Circuit Identifier (VCI). Data flows are broken up into fixed length cells, each of which contains a Virtual Path Identifier (VPI) that identifies the path between two nodes, and a Virtual Circuit Identifier (VCI) that identifies the data channel within that virtual path. Each virtual circuit maintains a constant flow of cells between the two end points. When there is no data to transmit, empty cells are sent. When data needs to be transmitted, it is immediately inserted into the cell flows.

Encapsulation	Shows the packet encapsulation type. Packet encapsulation specifies how to handle multiple protocols at the ATM transport layer. • VC-MUX: Point-to-Point Protocol over ATM Virtual Circuit Multiplexer (null encapsulation) allows only one protocol running per virtual circuit with less overhead. • LLC: Point-to-Point Protocol over ATM Logical Link Control allows multiple protocols running over one virtual circuit (using slightly more overhead).
QoS Class	ATM QoS classes including CBR, UBR and VBR.
PCR/SCR/MBS	QoS Parameters - PCR (Peak Cell Rate), SCR (Sustainable Cell Rate) and MBS (Maximum Burst Size) are configurable.
IP Address	If your IP address is assigned by the ISP each time you connect, leave this field all zeros. Otherwise, enter your ISP supplied static IP address here.
Subnet Mask	If your subnet mask is assigned by the ISP each time you connect, leave this field all zeros. Otherwise, enter your subnet mask here.
Connect Type	Sets connection mode to always connected, automatic or manual connection. Idle Time Enter the maximum idle time for the Internet connection. (minutes) After this time has been exceeded the connection will be terminated.
Username	Enter user name.
Password	Enter password
Confirm password	Confirm Password
MTU	Leave the Maximum Transmission Unit (MTU) at the default value (1500) unless you have a particular reason to change it.

Clone MAC Address

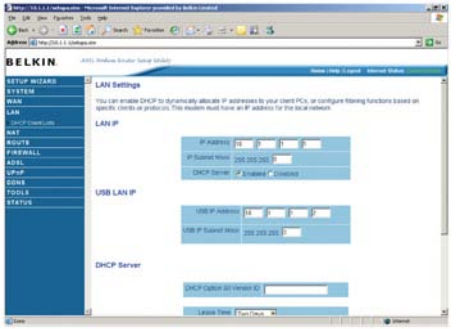
Clicking on the Clone MAC Address brings up the following screen.

Some ISPs may require that you register your MAC address with them. If this is the case, the MAC address of the Modem must be changed manually to the MAC address that you have registered with your ISP. Most ISP's in Australia and New Zealand do not require this option.



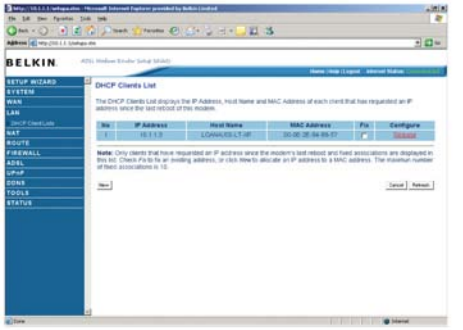
LAN

Use the LAN (Local Area Network) menu to configure the LAN IP address and to enable the DHCP server for dynamic client address allocation.



Parameter	Description
IP Address	The IP address of the Modem.
IP Subnet Mask	The subnet mask of the Modem.
DHCP Server	To dynamically assign an IP address to client PCs, enable the DHCP (Dynamic Host Configuration Protocol) Server.
Lease Time	Set the DHCP Lease Time
DHCP Option 60 Vendor ID	If you wish you can Specify the Name of your DHCP Server (Optional)
Lease Time	Specify the length of time that the DHCP will assign an IP address to a computer for.
Start IP	Specify the start IP address of the DHCP pool. Do not include the gateway address of the Modem in the client address pool. (See “TCP/IP Configuration”). If you attempt to include the Modem gateway address (10.1.1.1 by default) in the DHCP pool, an error dialog box will appear. If you change the pool range, make sure the first three octets match the gateway’s IP address, i.e., 10.1.1.xxx.
End IP	Specify the end IP address of the DHCP pool.
Domain Name	If your network uses a domain name, enter it here. Otherwise, leave this field blank.

DHCP Client List

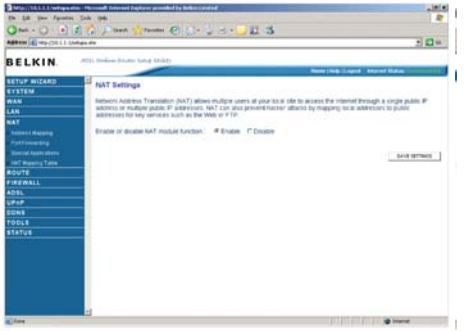


The DHCP Clients List displays the IP Address, Host Name and MAC Address of each client that has requested an IP address since the last reboot of the Modem. Check the FIX box to have the IP address and the MAC address linked so that the IP address will always be assigned as it is on this screen.

NAT

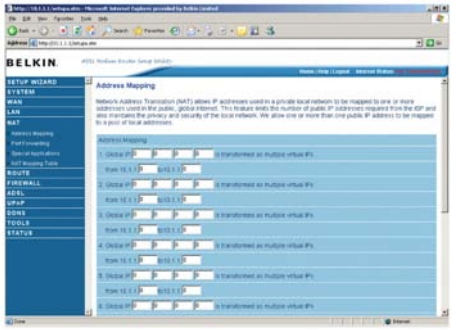
From this section you can configure the Virtual Server, and Special Application features that provide control over the TCP/ UDP port openings in the Modem’s firewall. This section can be used to support several Internet based applications such as web, email, FTP, and Telnet.

NAT Settings



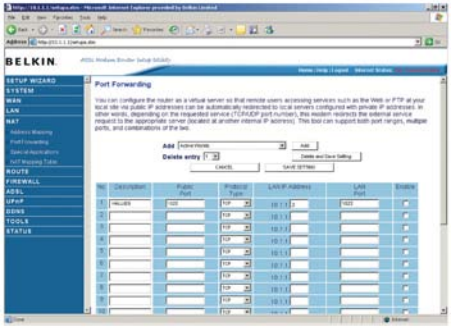
NAT allows one or more public IP addresses to be shared by multiple internal users. You can enable or disable NAT here. Recommended setting = Enable.

Address Mapping



Use Address Mapping to allow a limited number of public IP addresses to be translated into multiple private IP addresses for use on the internal LAN network. This also hides the internal network for increased privacy and security.

Port Forwarding



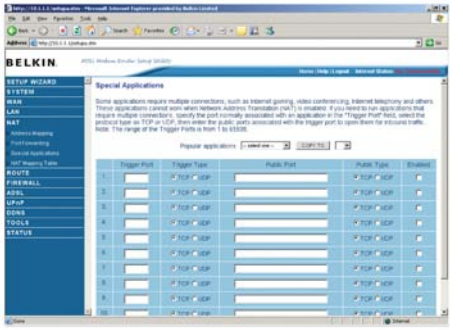
If you configure the Port Forwarding settings, remote users accessing services such as web or FTP at your local site via public IP addresses can be automatically redirected to local servers configured with private IP addresses. In other words, depending on the requested service (TCP/UDP port number), the Modem redirects the external service request to the appropriate server (located at another internal IP address).

For example, if you set Type/Public Port to TCP/80 (HTTP or web) and the LAN IP Address/LAN Port to 10.1.1.3/80, then all HTTP requests from outside users will be transferred to 10.1.1.3 on port 80. Therefore, by just entering the IP address provided by the ISP, Internet users can access the service they need at the local address to which you redirect them.

The more common TCP service ports include:

HTTP: 80, FTP: 21, Telnet: 23, and POP3: 110.

Special Applications



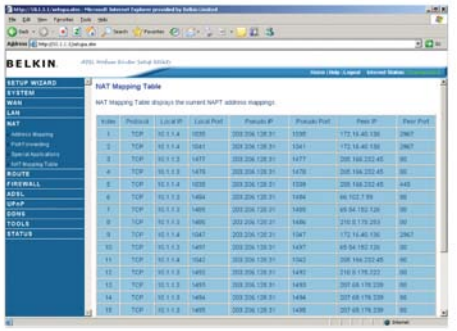
Some applications, such as Internet gaming, video conferencing, Internet telephony and others, require multiple connections. These applications cannot work with Network Address Translation (NAT) enabled. If you need to run applications that require multiple connections, use the following screen to specify the additional public ports to be opened for each application.

Specify the public port number normally associated with an application in the Trigger Port field. Set the protocol type to TCP or UDP, and then enter the ports that the application requires. The ports may be in the format 7, 11, 57, or in a range, e.g., 72-96, or a combination of both, e.g., 7, 11, 57, 72-96.

Popular applications requiring multiple ports are listed in the Popular Applications field. From the drop-down list, choose the application and then choose a row number to copy this data into.

Note: Choosing a row that already contains data will overwrite the current settings.

NAT Mapping Table



NAT Mapping Table displays the current NAPT (Network Address Port Translation) address mappings. The NAT address mappings are listed 20 lines per page, click the control buttons to move forwards and backwards. As the NAT mapping is dynamic, a Refresh button is provided to refresh the NAT Mapping Table with the most up-to-date values.

The content of the NAT Mapping Table is described as follows:

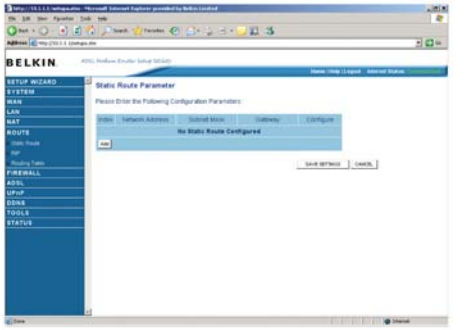
- Protocol - protocol of the flow.
- Local IP - local (LAN) host's IP address for the flow.
- Local Port - local (LAN) host's port number for the flow.
- Pseudo IP - translated IP address for the flow.
- Pseudo Port - translated port number for the flow.
- Peer IP - remote (WAN) host's IP address for the flow.
- Peer Port - remote (WAN) host's port number for the flow.

Route

These pages define routing related parameters, including static routes and Routing Information Protocol (RIP) parameters.

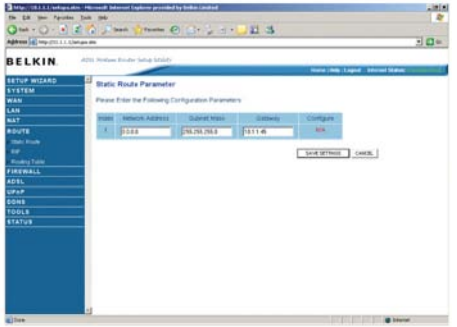
Static Route Parameters

Static routing is the manual method used to set up routing. A network administrator enters routes into the Modem using the following screens. This method has the advantage of being predictable, and simple to set up. It is easy to manage in small networks but does not scale well.



Parameter	Description
Index	Displays the number of the route.
Network Address	Displays the IP address of the remote computer for which to set a static route.
Subnet Mask	Displays the subnet mask of the remote network for which to set a static route.
Gateway	Displays the WAN IP address of the gateway to the remote network.
Configure	Allows you to modify or delete configuration settings

Click Add or Edit to display the following page and add a new static route to the list.

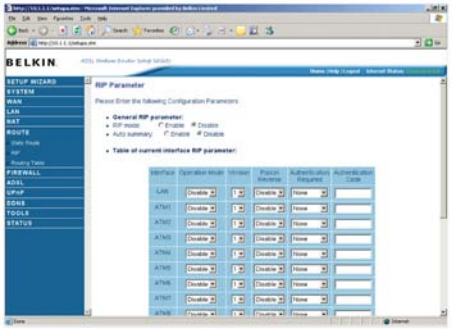


Parameter	Description
Index	Displays the number of the route.
Network Address	Enter the IP address of the remote computer for which to set a static route.
Subnet Mask	Enter the subnet mask of the remote network for which to set a static route.
Gateway	Enter the WAN IP address of the gateway to the remote network.

Manually Configuring your Modem

RIP Parameter

The device supports Routing Information Protocol (RIP) v1 and v2 to dynamically exchange routing information with adjacent Modems.

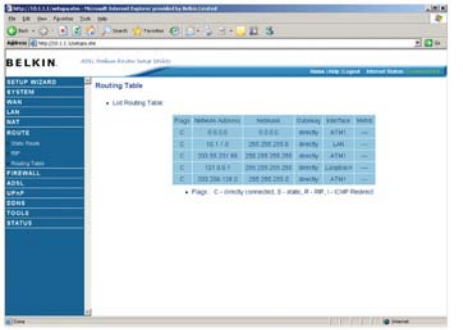


Parameter	Description
RIP mode	Globally enables or disables RIP.
Auto summary	If Auto summary is disabled, then RIP packets will include sub-network information from all sub¬net works connected to the ADSL Modem. If enabled, this sub-network information will be summarized to one piece of information covering all sub-networks.
Interface	The WAN interface to be configured.
Operation Mode	Disable: RIP disabled on this interface. Enable: RIP enabled on this interface. Silent: Listens for route broadcasts and updates its route table. It does not participate in sending route broadcasts.
Version	Sets the RIP version to use on this interface.
Poison Reverse	A method for preventing loops that would cause endless retransmission of data traffic.

Authentication Required	None: No authentication. Password: A password authentication key is included in the packet. If this does not match what is expected, the packet will be discarded. This method provides very little security as it is possible to learn the authentication key by watching RIP packets. MD5: An algorithm that is used to verify data integrity through the creation of a 128-bitmessage digest from data input (which may be a message of any length) that is claimed to be as unique to that specific data as a fingerprint is to a specific individual.
Authentication Code	Password or MD5 Authentication key.

RIP sends routing-update messages at regular intervals and when the network topology changes. When a Modem receives a routing update that includes changes to an entry, it updates its routing table to reflect the new route. RIP Modems maintain only the best route to a destination. After updating its routing table, the Modem immediately begins transmitting routing updates to inform other network Modems of the change.

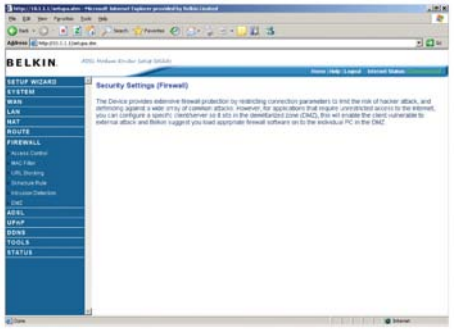
Routing Table



Parameter	Description
Flags	Indicates the route status: C = Direct connection on the same subnet. S = Static Modem R = RIP (Routing Information Protocol) assigned route. I = ICMP (Internet Control Message Protocol) Redirect route.
Network Address	Destination IP address
Netmask	The subnetwork associated with the destination. This is a template that identifies the address bits in the destination address used for routing to specific subnets. Each bit that corresponds to a “1” is part of the subnet mask number; each bit that corresponds to “0” is part of the host number.
Gateway	The IP address of the Modem at the next hop to which frames are forwarded.
Interface	The local interface through which the next hop of this route is reached.
Metric	When a Modem receives a routing update that contains a new or changed destination network entry, the Modem adds 1 to the metric value indicated in the update and enters the network in the routing table.

Firewall

The Modem's firewall enables access control of client PCs, blocks common hacker attacks, including IP Spoofing, Land Attack, Ping of Death, IP with zero length, Smurf Attack, UDP port loopback, Snork Attack, TCP null scan, and TCP SYN flooding.



Access Control

Access Control allows users to define the outgoing traffic permitted or not-permitted through the WAN interface.

The Modem can also limit the access of hosts within the local area network (LAN). The MAC Filtering Table allows the Modem to enter up to 32 MAC addresses that are not allowed access to the WAN port.

The following items are displayed on the Access Control screen:

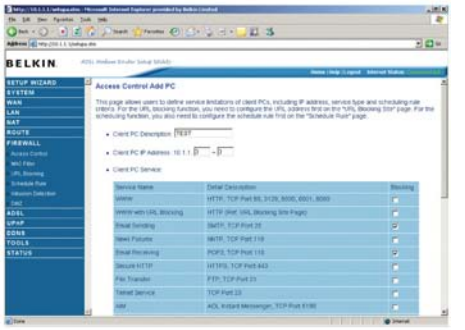
Parameter	Description
Enable Filtering	Enables or disables the filtering function. Function
Normal Filtering Table	Displays the IP address (or an IP address range) filtering table.

Click Add PC on the Access Control screen to view the following page.

Access Control Add PC

The settings in the screen shot below will block all email sending and receiving.

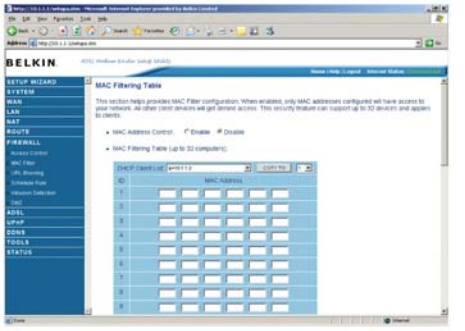
Define the appropriate settings for client PC services (as shown above). Click "OK" to save your settings. The added PC will now appear in the Access Control page.



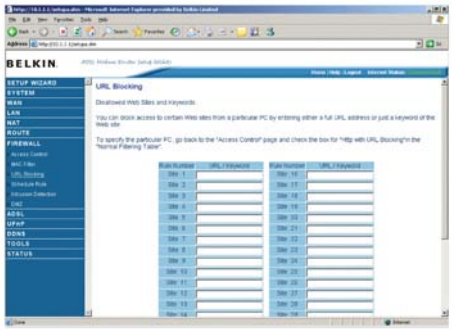
MAC Filter

Use this page to block access to your network using MAC addresses.

The Modem can also limit the access of hosts within the local area network (LAN). The MAC Filtering Table allows the Modem to enter up to 32 MAC addresses that are allowed access to the WAN port. All other devices will be denied access.



URL Blocking



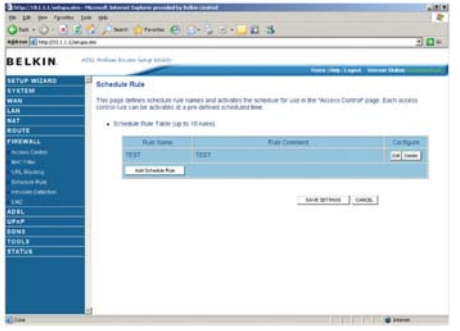
To configure the URL Blocking feature, use the table below to specify the web sites (www.somesite.com) and/or keywords you want to filter on your network.

To complete this configuration, you will need to create or modify an access rule in “Access Control”. To modify an existing rule, click the Edit option next to the rule you want to modify. To create a new rule, click on the Add PC option.

From the Access Control Page, Add PC section, check the option for “WWW with URL Blocking” in the Client PC Service table to filter out the web sites and keywords selected below, on a specific PC.

The Modem allows the user to block access to web sites from a particular PC by entering either a full URL address or just a keyword. This feature can be used to protect children from accessing violent or pornographic web sites.

Schedule Rule

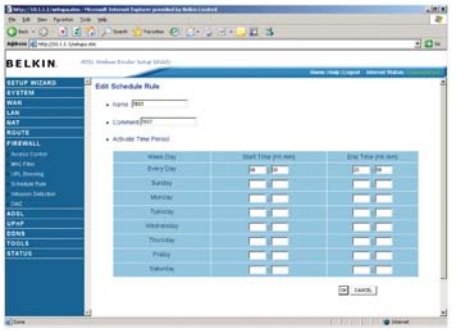


You may filter Internet access for local clients based on rules.

Each access control rule may be activated at a scheduled time. Define the schedule on the Schedule Rule page, and apply the rule on the Access Control page.

Click Add Schedule Rule.

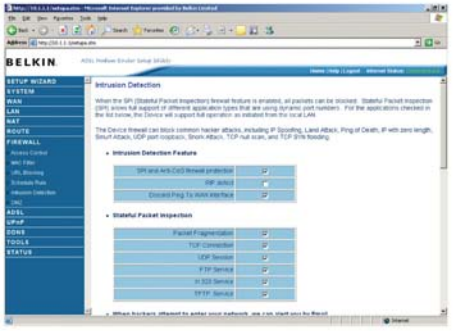
Edit Schedule Rule



You can create and edit schedule rules on this page.

Define the appropriate settings for a schedule rule (as shown on the above screen). The rule in the screen shot above prohibits emailing after 8.00am to 11.59pm. Upon completion, click “OK” to save your schedule rules.

Intrusion Detection

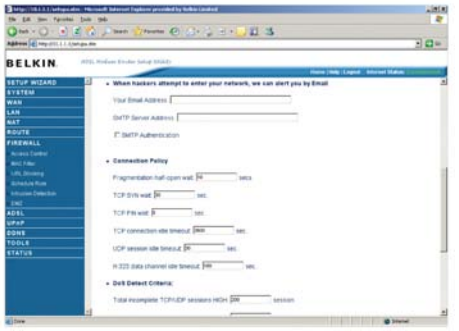


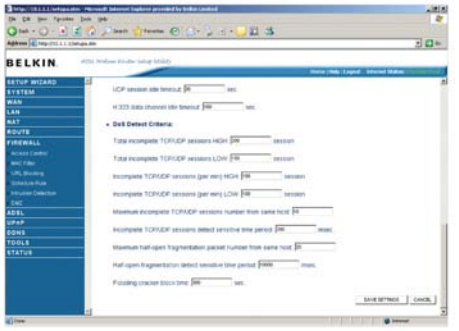
The Modem’s firewall inspects packets at the application layer, maintains TCP and UDP session information including timeouts and number of active sessions, and provides the ability to detect and prevent certain types of network attacks such as Denial-of-Service (DoS) attacks.

Network attacks that deny access to a network device are called DoS attacks. DoS attacks are aimed at devices and networks with a connection to the Internet. Their goal is not to steal information, but to disable a device or network so users no longer have access to network resources.

The Modem protects against DoS attacks including: Ping of Death (Ping flood) attack, SYN flood attack, IP fragment attack (Teardrop Attack), Brute-force attack, Land Attack, IP Spoofing attack, IP with zero length, TCP null scan (Port Scan Attack), UDP port loopback, Snork Attack.

Note: The firewall does not significantly affect system performance, so we advise enabling the prevention features to protect your network.





Parameter	Defaults	Description
Enable SPI and Anti-DoS firewall protection	Yes	The Intrusion Detection feature of the VoIP Modem limits the access of incoming traffic at the WAN port. When the Stateful Packet Inspection (SPI) feature is turned on, all incoming packets are blocked except those types marked with a check in the Stateful Packet Inspection section at the top of the screen.

Stateful Packet Inspection		This option allows you to select different application types that are using dynamic port numbers. If you wish to use Stateful Packet Inspection (SPI) for blocking packets, click on the Yes radio button in the “Enable SPI and Anti-DoS firewall protection” field and then check the inspection type that you need, such as Packet Fragmentation, TCP Connection, UDP Session, FTP Service, H.323 Service, and TFTP Service. It is called a “Stateful” packet inspection because it examines the contents of the packet to determine the state of the communication; i.e., it ensures that the stated destination computer has previously requested the current communication. This is a way of ensuring that all communications are initiated by the recipient computer and are taking place only with sources that are known and trusted from previous interactions. In addition to being more rigorous in their inspection of packets, stateful inspection firewalls also close off ports until a connection to the specific port is requested. When particular types of traffic are checked, only the particular type of traffic initiated from the internal LAN will be allowed. For example, if the user only checks FTP Service in the Stateful Packet Inspection section, all incoming traffic will be blocked except for FTP connections initiated from the local LAN.
Discard Ping from WAN Discard		Prevents a ping on the Modem’s WAN port from being routed to the network.

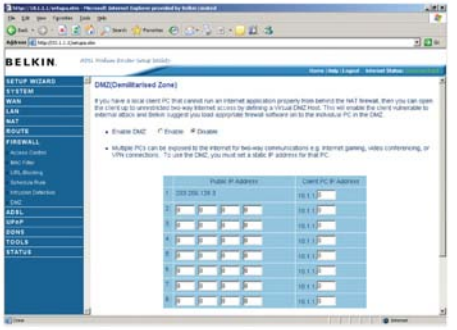
RIP Defect	Enabled	If the Modem does not reply to an IPX RIP request packet, it will stay in the input queue and not be released. Accumulated packets could cause the input queue to fill, causing severe problems for all protocols. Enabling this feature prevents the packets accumulating.
Your E-mail Address		Enter your email address.
SMTP Server Address		Enter your SMTP server address (usually the part of the email address following the “@” sign).
POP3 Server Address		Enter your POP3 server address (usually the part of the email address following the “@” sign).
User Name		Enter your email account user name.
Password		Enter your email account password.
Fragmentation half-open wait	10 secs	Configures the number of seconds that a packet state structure remains active. When the timeout value expires, the Modem drops the unassembled packet, freeing that structure for use by another packet.
TCP SYN wait	30 secs	Defines how long the software will wait for a TCP session to reach an established state before dropping the session.
TCP FIN wait	5 secs	Specifies how long a TCP session will be managed after the firewall detects a FIN-exchange.
TCP connection idle timeout		3600 secs (1 hour) The length of time for which a TCP session will be managed if there is no activity.
UDP session idle timeout	30 secs	The length of time for which a UDP session will be managed if there is no activity.

Manually Configuring your Modem

H.323 data channel idle timeout	180 secs	The length of time for which an H.323 session will be managed if there is no activity.
Total incomplete TCP/UDP sessions HIGH	300 sessions	Defines the rate of new un-established sessions that will cause the software to start deleting half-open sessions.
Total incomplete TCP/UDP sessions LOW	250 sessions	Defines the rate of new un-established sessions that will cause the software to stop deleting half-open sessions.
Incomplete TCP/UDP sessions (per min.) HIGH	250 sessions	Maximum number of allowed incomplete TCP/UDP sessions per minute.
Incomplete TCP/UDP sessions (per min.) LOW	200 sessions	Minimum number of allowed incomplete TCP/UDP sessions per minute.
Maximum incomplete TCP/UDP sessions number from same host	10	Maximum half-open fragmentation packet number from same host
Incomplete TCP/UDP sessions detect sensitive time period	300 secs	Length of time before an incomplete TCP/UDP session is detected as incomplete
Maximum half-open fragmentation packet number from same host	30	Maximum number of half-open fragmentation packets from the same host.

Maximum number of half-open fragmentation packets from the same host.	1 secs	Length of time before a half-open fragmentation session is detected as half-open.
Flooding cracker block time	300 secs	Length of time from detecting a flood attack to blocking the attack.

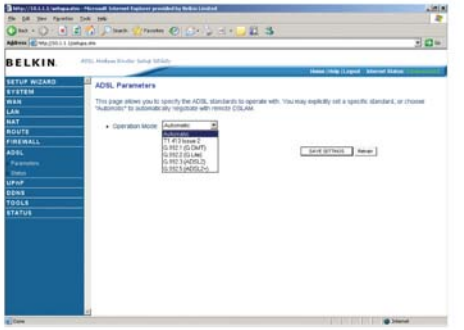
DMZ



If you have a client PC that cannot run an Internet application properly from behind the firewall, you can open the client up to unrestricted two-way Internet access. Enter the IP address of a DMZ (Demilitarized Zone) host on this screen. Adding a client to the DMZ may expose your local network to a variety of security risks, so it is only recommended that this is used option as a last resort.

It is also recommended that you disable and software firewall installed on your PC, this will continue to block ports even if the PC is entered into the DMZ.

ADSL



ADSL Parameters

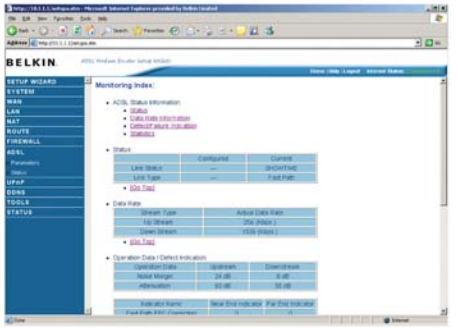
We recommend leaving the Operation Mode at the default Automatic setting, to automatically negotiate with remote DSLAM (Digital Subscriber Line Access Multiplexer). A DSLAM is owned and managed by your ISP, if the Modem is having problems connecting to the Internet, it may be necessary to force the Operation Mode to your ISP's preferred connection.

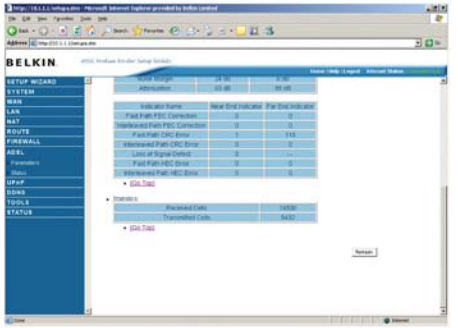
Operation Mode

- Automatic
- T1.413 Issue 2
- G.992.2 (G.Lite)
- G.992.5 (ADSL2+)

Status

The Status page displays ADSL status information.



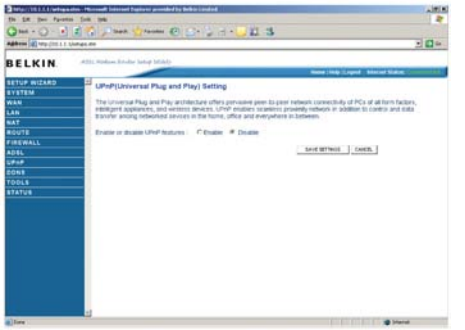


Parameter	Description
Line Status	Shows the current status of the ADSL line.
Data Rate: Upstream	Actual and maximum upstream data rate.
Downstream	Actual and maximum downstream data rate.
Operation Data/Defect Indication:	

Noise Margin:	
Upstream	Minimum noise margin upstream.
Downstream	Minimum noise margin downstream. Maximum fluctuation in the output power
Output Power Attenuation:	
Upstream	Maximum reduction in the strength of the upstream signal.
Downstream	Maximum reduction in the strength of the downstream signal.
Fast Path FEC Correction	There are two latency paths that may be used: fast and interleaved. For either path a forward error correction (FEC) scheme is employed to ensure higher data integrity. For maximum noise immunity, an interleaver may be used to supplement FEC.
Interleaved Path FEC Correction	An interleaver is basically a buffer used to introduce a delay, allowing for additional error correction techniques to handle noise Interleaving slows the data flow and may not be optimal for real-time signals such as video transmission.
Fast Path CRC Error	Indicates the number of Fast Path Cyclic Redundancy Check errors.
Interleaved Path CRC Error	Indicates the number of Interleaved Path Cyclic Redundancy Check errors.
Loss of Signal Defect	Momentary signal discontinuities.
Loss of Frame Defect	Failures due to loss of frames.
Loss of Power Defect	Failures due to loss of power.
Fast Path HEC Error	Fast Path Header Error Concealment errors.
Interleaved Path HEC Error	Interleaved Path Header Error Concealment errors.

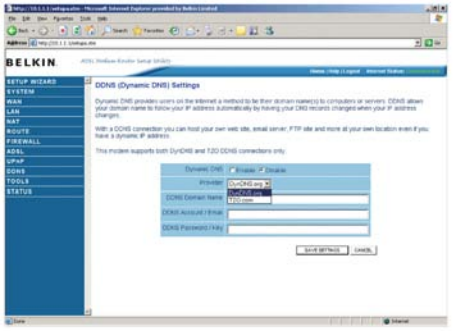
Statistics	(Superframes represent the highest level of data presentation. Each superframe contains regular ADSL frames, one of which is used to provide superframe synchronization, identifying the start of a superframe. Some of the remaining frames are also used for special functions.)
Received Superframes Interleaved	Number of interleaved superframes received.
Transmitted Superframes Interleaved	Number of interleaved superframes transmitted.
Received Superframes Fast	Number of fast superframes received.
Transmitted Superframes Fast	Number of fast superframes transmitted.

UPnP



UPnP (Universal Plug-and-Play) is a technology that offers seamless operation of voice messaging, video messaging, games, and other applications that are UPnP-compliant. Some applications require the Modem's firewall to be configured in a specific way to operate properly. This usually requires opening TCP and UDP ports, and in some instances, setting trigger ports. An application that is UPnP compliant has the ability to communicate with the Modem, basically "telling" the Modem which way it needs the firewall configured. The Modem ships with the UPnP feature disabled. If you are using any applications that are UPnP-compliant, and wish to take advantage of the UPnP features, you can enable the UPnP feature. Click on the "Enable" button then click on the "SAVE SETTINGS" button to save your settings.

DDNS



DDNS (Dynamic Domain Name Server) provides a way to tie a domain name to the Modems WAN IP. DDNS allows your domain name to follow your IP Address automatically by having your DNS records changed when your IP Address changes.

With a DDNS connection you can host your own web site, email server, FTP site and more at your own location even if you have a dynamic IP Address.

This Modem supports both DynDNS (www.dyndns.org) and TZO (www.TZO.com) DDNS connections only. You will need to register an account with either of these Dynamic DNS websites in order to utilize this function.

Parameter	Description
Provider	Select either DynDNS or TZO
Dynamic DNS	Enable or Disable DDNS Function
DDNS Domain Name	Type in your domain name (e.g. mydns.dyndns.org)
DDNS Account/ Email	Add your account username or email address (DDNS Provider will specify)
DDNS Password/Key	Add your account password

Tools

Use the Tools menu to back-up the current settings, to restore previously saved settings, or to restore the factory default settings.

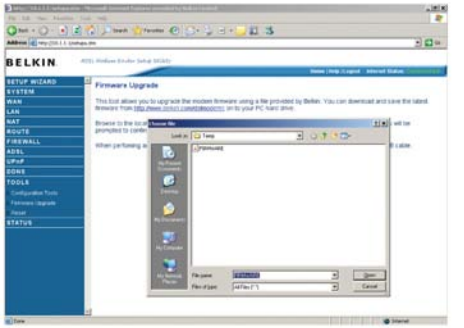
Configuration Tools

Check Backup Modem Configuration and click “NEXT” to save your Modem’s configuration to a file named “backup.cfg” on your PC.

You can then check Restore from saved Configuration file (backup.cfg) to restore the saved backup configuration file.

To restore the factory settings, check Restore Modem to Factory Defaults and click “NEXT.” You will be asked to confirm your decision. Click “APPLY” to proceed, or “CANCEL” to go back.

Firmware Upgrade



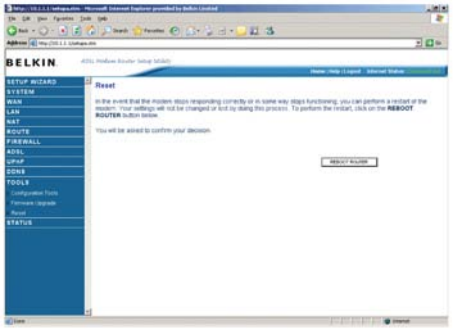
Use this screen to update the firmware or user interface to the latest versions. You can download the latest firmware from http://www.belkin.com/dslModems.

It is recommended that you back up your Modem’s settings prior to updating the firmware, you may loose all your current settings. Refer to “Backup Modem Configuration”.

Please note: If your Modem is functioning correctly, we do not recommend you update the firmware. Belkin is not responsible for any consequence as result of a firmware update. Please consult Belkin Technical Support prior to updating the Modem’s firmware.

Download the file to your hard drive. Then click Browse... to find the file on your computer. Select the firmware file and click “Open.” Click “BEGIN UPGRADE” to start the upgrade process.

Reset

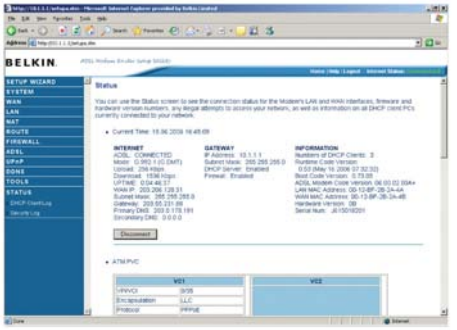


This function will reboot the Modem, no settings will be lost during this proccess.

Should your unit become unresponsive for any reason, you can simply perform a reset from this page. Performing a reset will reboot the device. Your configuration settings will remain the same.

Status

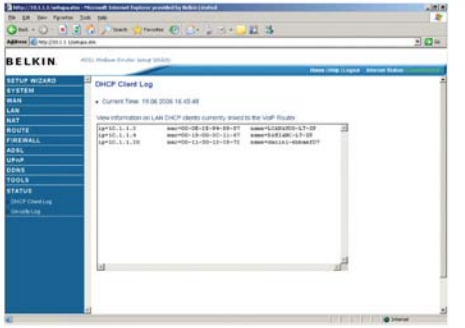
The Status screen displays WAN/LAN connection status, firmware and hardware version numbers, as well as information on DHCP clients connected to your network.



The following items are included on the Status screen:

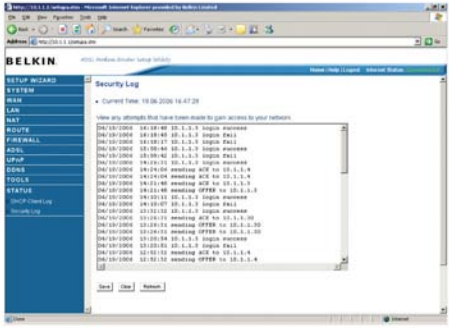
Parameter	Description
INTERNET	Displays WAN connection type and status. Release Click on this button to disconnect from the WAN. Renew Click on this button to establish a connection to the WAN.
GATEWAY	Displays system IP settings, as well as DHCP Server and Firewall status.
INFORMATION	Displays the number of attached clients, the firmware versions, and the physical MAC address for each media interface and for the Modem, as well as the hardware version and serial number.
ATM PVC	Displays ATM connection type and status.

DHCP Client List



Security Log

The security log may be saved to a file by clicking “Save” and choosing a location. DHCP Client Log displays information on DHCP clients on your network.



Parameter	Description
Security Log	Displays illegal attempts to access your network.
Save	Click on this button to save the security log file.
Refresh	Click on this button to refresh the screen.
Clear	Click on this button to delete the access log.

New Zealand Telepermit Special Conditions

PTC General Warning

The grant of a Telepermit for any item of terminal equipment indicates only that Telecom has accepted that the item complies with minimum conditions for connection to its network. It indicates no endorsement of the product by Telecom, nor does it provide any sort of warranty. Above all, it provides no assurance that any item will work correctly in all respects with another item of Telepermitted equipment of a different make or model, nor does it imply that any product is compatible with all of Telecom's network services.

This Belkin F5D5730au ADSL Router on Long Lines

This Belkin F5D5730au ADSL Router may not achieve the type of "high speed" operation expected when attached to a line that is longer than intended by the ITU-T ADSL standard i.e. >3 km of 0.4mm cable or a shorter cable length with several tails or multiples. If the Router is installed in such conditions and does not give the expected performance do not refer the matter to the Telecom Fault Service.

The Service Covered by These Telepermits

This Telepermit shows that this Belkin F5D5730au ADSL Router is suitable for connection to Telecom's existing ADSL1 service. This service is defined by the specification PTC270. When compliance with the specification is proved a PTC272 Telepermit is issued for each product. This Telepermit does not show suitability for connection to a new ADSL2 service when Telecom introduces it. Telecom will require proof of compliance with a new PTC specification when the new ADSL2 service is introduced. This note should be attached to each of the boxes containing these Belkin F5D5730au ADSL Routers:

ADSL2 & ADSL2+ Services

ADSL2 and ADSL2+ services are only available from the network of the ADSL Service Provider. Telecom does not currently provide either of the services to customers from its Broadband network. When Telecom introduces either ADSL2 and/or ADSL2+ service this Belkin F5D5730au ADSL Router will have to prove itself suitable for connection to the service.